

CLAIMS:

1. A method of conditioning a substrate, the method including the steps of:
 - a) Subjecting the substrate to RF energy in a constrained environment for a time sufficient to heat at least part of the moisture contained in the substrate to a temperature of or above the boiling point of water at ambient pressure; and
 - b) Reducing pressure in the constrained environment in a manner causing the moisture within the substrate to boil or evaporate.
- 10 2. A method as claimed in claim 1 wherein the RF energy is at a frequency between about 10 and 100 MHz.
3. A method as claimed in claim 2 wherein the RF energy is at a frequency between about 27 and 40 MHz.
- 15 4. A method as claimed in any one of claims 1 to 3 wherein the pressure in the constrained environment is above atmospheric.
5. A method as claimed in claim 4 wherein the pressure is between approximately 0.5 psi and 40 psi.
6. A method as claimed in claim 5 wherein the pressure is between approximately 3 psi and 30 psi.
- 20 7. A method as claimed in claim 6 wherein the pressure is between approximately 6 psi and 25 psi.
8. A method as claimed in any one of claims 1 to 3 wherein the pressure in the constrained environment is at atmospheric pressure.
- 25 9. A method as claimed in any one of claims 1 to 8 wherein the temperature achieved within the substrate is between 100 and 130°C.
10. A method as claimed in any one of claims 1 to 9 wherein the pressure in the constrained environment is reduced by venting.
- 30 11. A method as claimed in any one of claims 1 to 9 wherein the pressure is reduced by applying or producing a vacuum.
12. A method as claimed in any one of claims 1 to 9 wherein the pressure is reduced by a combination of venting and applying or producing a vacuum.
13. A method as claimed in any one of claims 1 to 12 wherein the substrate is a lignocellulosic material.
- 35 14. A method as claimed in claim 13 wherein the substrate is wood.
15. A method as claimed in claim 13 or 14 wherein the lignocellulosic material has a moisture content of more than 60% based on dry weight of the material.

16. A method as claimed in claim 15 wherein the moisture content is greater than 100% based on dry weight of the material.
17. A method as claimed in claim 15 wherein the moisture content is less than 30% based on dry weight of the material.
- 5 18. A method as claimed in any one of claims 1 to 17 wherein the method further comprises the step of storing the substrate to allow the temperature and moisture in the substrate to equilibrate.
19. A method as claimed in any one of claims 1 to 18 wherein the substrate is concurrently or subsequently impregnated with a composition.
- 10 20. A method as claimed in claim 19 wherein the composition is an aqueous solution that contains polar and/or non polar solvents, pesticidal or preservative components, and/or polymeric or pre-polymeric components.
21. A method as claimed in claim 19 or 20 wherein the composition contains a volatile pesticidal or preservative component, and/or pre-polymeric component.
- 15 22. A conditioning method comprising at least the steps of:
- a) Subjecting the substrate to RF energy in a constrained environment at substantially ambient pressure for a time sufficient to heat at least part of the moisture contained in the substrate to a temperature below the boiling point of water at ambient pressure; and
- b) Reducing pressure in the constrained environment by applying or producing a vacuum in a manner causing the moisture within the substrate to boil or evaporate.
23. A conditioning method comprising at least the steps of:
- a) Subjecting the substrate to RF energy in a constrained environment for a time sufficient to heat at least part of the moisture contained in the substrate to a temperature of or above the boiling point of water at ambient pressure;
- 25 b) incorporating into the void surrounding the substrate in the constrained environment, a composition which may impart sterilisation, preservative, or property modifying aspects; and
- c) reducing pressure in the constrained environment to allow the moisture within the substrate to boil and/or evaporate.
- 30 24. A substrate that has been conditioned according to a method of any one of claims 1 to 23.
- 35 25. A substrate as claimed in claim 24 wherein the substrate is a lignocellulosic material.

26. A substrate as claimed in claim 25 wherein the substrate is wood.